CLAIMS

1. A rotary type CVD film forming apparatus for mass production, comprising a film forming chamber formed by providing one columnar body serving as an external electrode having a plurality of housing spaces for housing one plastic container each in one said housing space so that the central axis of each of said housing spaces is parallel with the central axis of said external electrode and said housing spaces are arranged side by side on the same circle which uses the central axis of the external electrode as a center point, providing internal electrodes which can be arranged to be freely inserted from the mouth portion into the inside of the plastic containers loaded in each of said housing spaces, providing an insulating member to form an insulating state between the internal electrodes and the external electrode when said internal electrodes are inserted inside said plastic containers, and providing a cover which is closed for reducing the pressure inside said housing spaces, wherein a plurality of said film forming chambers is arranged on a rotation support body at equal intervals in a circular state, source gas introduction means which introduce a source gas that is converted to plasma inside the plastic containers housed in each of said film forming chambers is provided, and high frequency supply means which supply a high frequency to the external electrode of each of said film forming chambers is provided to form a CVD (chemical vapor growing) film on the internal surfaces of said plastic containers.

2. The rotary type CVD film forming apparatus for mass production described in Claim 1, wherein said housing spaces are arranged side by side at equal intervals on the same circle which uses the central axis of said external electrode as a center point.

3. The rotary type CVD film forming apparatus for mass production described in Claim 1 or 2, wherein two housing spaces are provided in one external electrode, and said film forming chambers are arranged at equal intervals on said rotation support body so that said housing spaces are arranged on the same circle which uses the rotation axis of said rotation support body as a center point.

4. The rotary type CVD film forming apparatus for mass production described in Claim 1 or 2, wherein two housing spaces are provided in one external electrode, and when said film forming chambers are arranged on said rotation support body, one housing space is arranged outside a circle formed by each of said film forming chambers and the other housing space is arranged inside said circle, whereby the housing spaces of said external electrodes are arranged in two rows in the circumferential direction of said circle.

5. The rotary type CVD film forming apparatus for mass production described in Claim 1 or 2, wherein three housing spaces are provided in one external electrode, and when said film forming chambers are arranged on said rotation support body, a relationship is formed so that two housing spaces of every other film forming chamber are arranged outside the circle formed by the film forming chambers with the remaining one housing space arranged inside said circle, and two housing spaces of the adjacent film forming chambers are arranged inside said circle with the remaining one housing space arranged outside said circle, whereby the housing spaces of said external electrodes are arranged in two rows in the circumferential direction of said circle.

6. The rotary type CVD film forming apparatus for mass production described in Claim 1 or 2, wherein four housing spaces are provided in one external electrode, and when said film forming chambers are arranged on said rotation support body, two housing spaces are arranged outside a circle formed by the film forming chambers, and the other two housing spaces are arranged inside said circle, whereby the housing spaces of said external electrodes are arranged in two rows in the circumferential direction of said circle.

7. The rotary type CVD film forming apparatus for mass production described in Claim 4 or 6, wherein when said film forming chambers are arranged on said rotation support body, said housing spaces are arranged in two rows in the circumferential direction of said circle with said circle interposed between mutually adjacent housing spaces, or said housing spaces are arranged in two rows in said circumferential direction with said circle interposed between mutually shifted housing spaces.

8. A method of forming a CVD film on the internal surfaces of plastic containers, wherein a container loading process which loads said plastic containers in said film forming chambers by housing said plastic containers in said housing spaces, a pre-film-formation gas adjustment process which replaces the inside of said plastic containers with a source gas adjusted to a prescribed film forming pressure, a CVD film forming process which converts said source gas to plasma and forms a CVD film on the internal surfaces of said plastic containers, a post-film-formation gas adjustment process which opens the inside of coated plastic containers to the atmosphere, and a container removal process which removes said coated containers from said film forming chambers are carried out during the time the rotation support body described in Claims 1 ~ 7 undergoes one rotation at a fixed speed.

9. The method of forming a CVD on the internal surfaces of plastic containers described in Claim 8, wherein a hydrocarbon gas or a Si-containing hydrocarbon gas is used as said source gas, and a DLC film is formed as said CVD film.

10. The rotary type CVD film forming apparatus for mass production described in Claims 1 ~ 7, wherein a hydrocarbon gas or a Si-containing hydrocarbon gas is used as said source gas, and a DLC film is formed as said CVD film.